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# **WATER SUPPLY OUTLOOK FOR ARIZONA**

U. S. DEPT. OF AGRICULTURE  
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MAR 3 - 1967

CURRENT SERIAL RECORDS

and  
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE.  
SALT RIVER VALLEY WATER USERS ASSOCIATION  
and  
ARIZONA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies named above in cooperation with the Federal, State and private organizations listed on the last page of this report.

AS OF  
FEB. 1, 1967

## TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season as they affect runoff will add to be an effective average. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1400 snow courses in Western United States and in the Columbia Basin in British Columbia. In the near future, it is anticipated that automatic snow water equivalent sensing devices along with radio telemetry will provide a continuous record of snow water equivalent at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data or reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

Listed below are water supply outlook reports based on Federal-State-Private Cooperative snow surveys. Those published by the Soil Conservation Service may be obtained from Soil Conservation Service, Room 507, Federal Building, 701 N. W. Glisan, Portland, Oregon 97209.

### PUBLISHED BY SOIL CONSERVATION SERVICE

D. A. WILLIAMS, Administrator

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, Western Regional Technical Service Center, Room 507, 701 N. W. Glisan, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	P. O. Box "F", Palmer, Alaska 99645
Arizona	6029 Federal Building, Phoenix, Arizona 85205
Colorado (N. Mex.)	12417 Federal Building, Denver, Colorado 80202
Idaho	P. O. Box 38, Boise, Idaho 83701
Montana	P. O. Box 855, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1218 S. W. Washington St., Portland, Oregon 97205
Utah	4001 Federal Building, Salt Lake City, Utah 84111
Washington	840 Bon Marche Bldg., Spokane, Washington 99206
Wyoming	P. O. Box 340, Casper, Wyoming 82602

### PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia



**WATER SUPPLY OUTLOOK**  
and  
**FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS**  
**for**  
**ARIZONA**

(Salt, Verde, Gila and Part of Lower Colorado River Basin)

*Report prepared by*

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PHOENIX, ARIZONA 85025

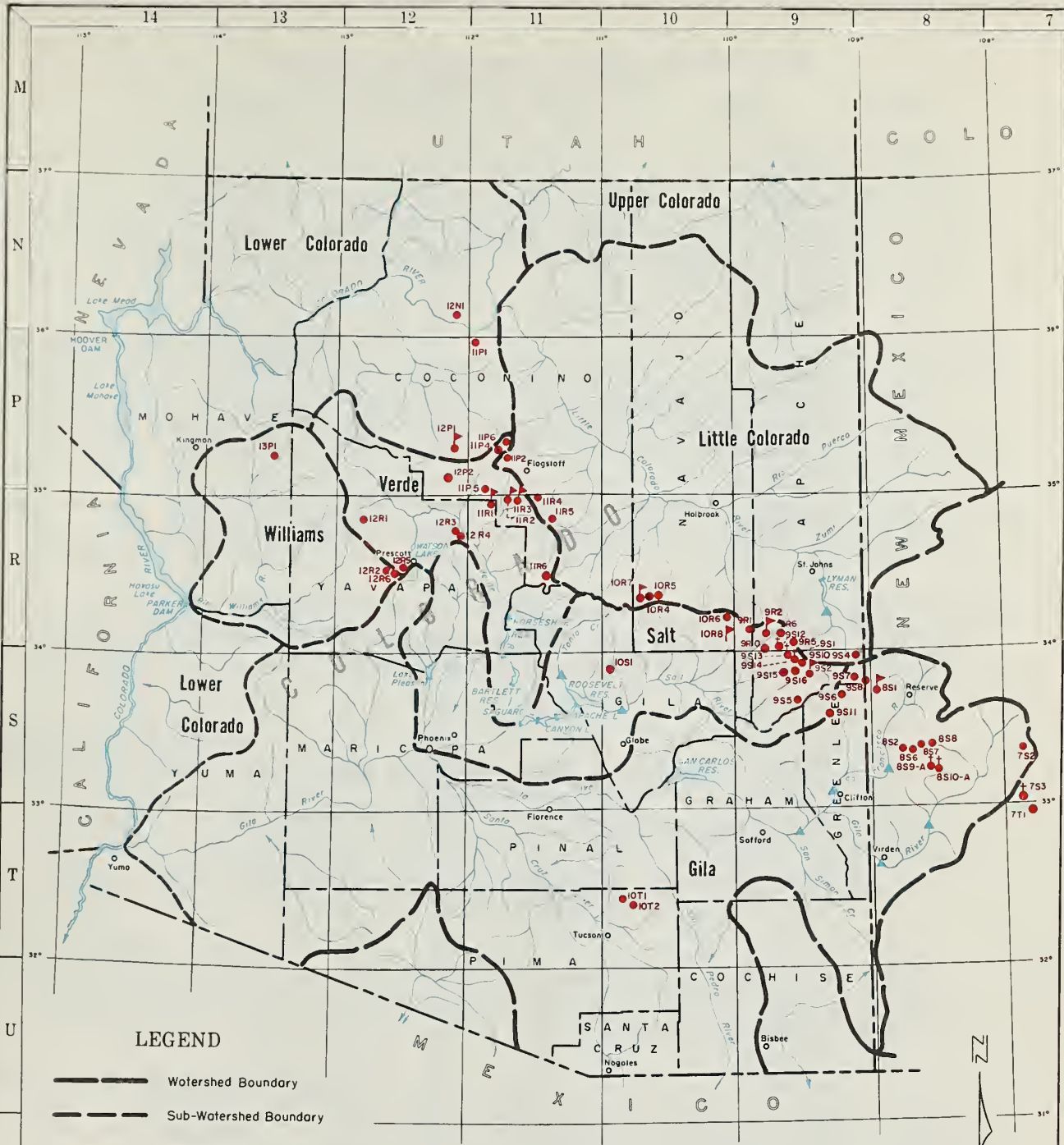
*Issued by*

MERRITT D. BURDICK  
STATE CONSERVATIONIST  
SOIL CONSERVATION SERVICE

VICTOR I. CORBELL  
PRESIDENT  
SALT RIVER VALLEY WATER USERS ASSOCIATION







# ARIZONA COOPERATIVE SNOW SURVEYS Snow Courses and Sub-Watersheds

25 0 25 50 75  
SCALE IN MILES

# INDEX to SNOW COURSES and SOIL MOISTURE STATIONS

<u>Number</u>	<u>Name</u>	<u>Sec</u>	<u>Twp</u>	<u>Rge</u>	<u>Elevation</u>	<u>River Basin</u>
11R6	Baker Butte (p)	4	12N	9E	7300	Verde
9S1	Baldy (p)	28	7N	27E	9125	Little Colorado
9S15	Baldy #2	12	6N	26E	10000	Little Colorado
9S16	Baldy #3	13	6N	26E	11000	Little Colorado
10T1	Bear Wallow	6	12S	16E	8100	Gila
9S6	Beaver Head	13	4N	30E	8000	San Francisco
9S10-*	Black River Divide	10	6N	27E	9400	Salt
12N1	Bright Angel	34	33N	3E	8400	Lower Colorado
12R1	Camp Wood	3	16N	6W	5700	Verde
10R7-M	Canyon Creek #2	18	11N	15E	7500	Little Colorado
11R2-M	Casner Park	19	18N	8E	6930	Verde
12P1-M	Chalender	27	22N	3E	7100	Verde
12R6	Copper Basin Divide (p)	23	13N	3W	6720	Verde
10R8-*	Corduroy Creek	4	8N	21E	6000	Salt
9S7	Coronado Trail	26	5N	30E	8000	San Francisco
7T1	Emory Pass	16	16S	9W**	7800	Mimbres
10R6	Forest Dale	2	9N	21E	6430	Salt
11P2	Fort Valley (p)	22	22N	6E	7350	Little Colorado
9R5	Ft. Apache	18	7N	27E	9160	Little Colorado
8S1-M	Frisco Divide	31	6S	20W**	8000	San Francisco
12R4	Gaddes Canyon	11	15N	2E	7600	Verde
10R5	Gentry	36	11N	15E	7650	Salt
11P1	Grand Canyon	21	30N	4E	7500	Lower Colorado
9S11	Hannagan Meadows (p)	19	3N	29E	9090	Salt
11R5	Happy Jack	30	17N	9E	7630	Verde
9R10	Hawley Lake	13	7N	24E	8300	Salt
10R4	Heber (p)	28	11N	15E	7600	Little Colorado
8S9-A	Hummingbird	19	11S	17W**	10550	San Francisco
8S6	Ice King	6	11S	18W**	8020	San Francisco
7S2	Inman	6	11S	10W**	7800	Gila
12R2	Iron Springs	22	14N	3W	6200	Bill Williams
9S2	Maverick Fork (p)	13	6N	27E	9150	Salt
9R2-M	McNary	23	8N	23E	7200	Salt
7S3-A	McKnight Cabin	10	15S	10W**	9300	Mimbres
9R1	Milk Ranch	33	8N	23E	7000	Salt
12R3	Mingus Mountain	3	15N	2E	7100	Verde
8S2	Mogollon	2	11S	19W**	7000	San Francisco
11R4	Mormon Lake	13	18N	8E	7350	Little Colorado
11R3-M	Mormon Mountain (p)	14	18N	8E	7500	Verde
9S12-A	Mt. Ord	4	6N	26E	11000	Salt
11R1-M	Munds Park	7	18N	7E	6500	Verde
11P5-M	Newman Park	25	19N	6E	6750	Verde
9S4	Nutriso	23	6N	30E	8500	San Francisco
9S5	Pacheta	27	4-1/2N	27E	7800	Salt
8S7	Redstone Trail	5	11S	18W**	8600	San Francisco
10T2	Rose Canyon	15	12S	16E	7300	Gila
8S8	Silver Creek Divide	4	11S	18W**	9000	San Francisco
9S13-A	Smith Cienega #1	10	6N	26E	9700	Salt
9S14-A	Smith Cienega #2	3	6N	26E	9900	Salt
11P4	Snow Bowl #1 (p)	36	23N	6E	10260	Verde
11P6	Snow Bowl #2	31	23N	7E	11000	Verde
9S8	State Line	6	6S	21W**	8000	San Francisco
12R5	White Spar	19	13N	2W	6000	Verde
12P2	Whitehorse Lake	2	20N	2E	7150	Verde
8S10-A	Whitewater	19	11S	17W**	10750	Gila
13P1	Willow Ranch	16	21N	11W	5000	Bill Williams
9R6	Wilson Lake (p)	4	7N	26E	9000	Salt
10S1	Workman Creek	33	6N	14E	6900	Salt

\* SOIL MOISTURE STA. ONLY

\*\* NM PRINCIPAL MERIDIAN

M SOIL MOISTURE STA.

(p) STORAGE GAGE

A AERIAL SNOW DEPTH MARKER



# ARIZONA WATER SUPPLY OUTLOOK

FEBRUARY 1, 1967

\* \* \* \* \*  
\*  
\* Much below normal runoff is in prospect for Arizona this \*  
\* year. Reservoir storage, however, is high and water supplies \*  
\* are good in all areas served by storage facilities. \*  
\* \* \* \* \*

## SNOW COVER AND PRECIPITATION

Warm temperatures and only light snowfall the last two weeks has resulted in a general decrease in snow cover. A moderate storm centered in the Williams area increased the water content of the snow pack 2-3" there. Elsewhere, however, increases were slight, and decreases were more common.

Snow cover ranges from 35% of average on the Verde Watershed, to less than 10% on the Gila. On the Salt River Watershed the snow pack is one-fourth of normal.

Precipitation at mountain stations varied from 15% to 60% of normal during January, with most stations receiving about one-fourth of normal. Since November 1, above normal precipitation has occurred only in the Flagstaff-Mormon Lake area.

## RESERVOIR STORAGE

Carry-over storage from the high runoff of a year ago is responsible for the large amount of water in storage in the major reservoirs today. Salt River Project Reservoirs now containing 80% of capacity, hold over twice their normal contents for this date. Water storage in the Lake Pleasant and San Carlos Reservoirs is close to five times average. Only Show Low Lake contains a below average amount of water.

## SOIL MOISTURE

Soils are saturated in the Flagstaff and Mogollon Rim areas due to the December storms and the recent melting of snow. In the White Mountains soil moisture is near average, but on the Gila Watershed soils are dry.

## STREAM FLOW AND WATER SUPPLY

Subnormal runoff occurred in all streams during January. Even the Verde River that flowed six times average in December dropped to nearly half its normal flow last month. Most streams produced about one-fourth their normal flow.

Stream flow forecasts for the January through May period, range from 21% of average on the Little Colorado River to 78% on the Verde. Most other streams are expected to flow 30-40% of average. The Salt River Project streams should produce 310,000 acre feet or 56% of average.

Water Supplies will be short along the upper Gila River and in a few other areas depending on direct diversions of water from streams. The major projects served by reservoir storage, however, will have above average water supplies.



# STREAM FLOW FORECASTS - FEBRUARY 1, 1967

The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature will be near average from the present time to the end of the forecast period. Appreciable deviations from normal of temperature and/or precipitation will correspondingly modify these forecasts.

SUB-WATERSHED, STREAM and STATION	SEASONAL STREAM FLOW IN THOUSANDS OF ACRE FEET					
	FORECAST PERIOD: JANUARY - MAY, INCLUSIVE					
	Forecast	Percent	Measured Runoff			1948-62
	Runoff	15-Year				Average
	1967	Average	1966	1965	1964	
Salt River near Roosevelt	133	42	554.5	588.8	112.6	319.1
Tonto Creek near Roosevelt	32	63	39.7	129.3	11.7	50.9
Verde River above Horseshoe	145	78	220.9	513.9	117.8	185.8
Gila River near Gila	24	43	120.9	47.0	19.0	55.1
Gila River near Virden	22	33	163.5	52.6	20.0	67.8
Gila River near Solomon	41	30	351.3	109.2	36.6	135.3
Frisco River at Clifton	21.5	31	165.5	59.0	17.0	68.7
Frisco River near Glenwood	8.2	31	73.1	24.2	5.1	26.6
Mimbres River near Mimbres	0.8	21	---	1.3	1.9	3.8
Little Colorado River above Lyman Dam (JAN.-JUNE, Incl.)	2.1	21	23.1	21.0	5.7	9.8

Granite Creek stream flow should come close to filling Watson Lake this Spring.

# THE HISTORY OF THE

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STATUS OF ARIZONA RESERVOIR STORAGE - ABOUT FEBRUARY 1, 1967

SUB- WATERSHED and/or STREAM	RESERVOIR	USABLE CAPACITY 1000's ACRE FT.	USABLE STORAGE - 1000s ACRE FEET			
			1967	1966	1965	15-Year Average 1948-62
GILA RIVER DRAINAGE						
Agua Fria	Lake Pleasant	157.6	126.6	157.2	16.8	29.4
Granite "	Watson Lake	4.7	3.2	4.5	2.3	---
	Willow Creek	6.1	3.9	6.1	---	---
Gila	San Carlos	1,206.0	322.1	374.3	56.7	65.0
Verde	Bartlett	179.5	137.1	158.4	84.0	66.0
Verde	Horseshoe	142.8	67.9	111.3	19.3	16.6
Salt	Roosevelt	1,382.0	1,143.0	1,240.2	395.8	416.1
Salt	Apache	245.0	229.7	240.0	229.9	194.7
Salt	Canyon	58.0	35.9	52.3	39.2	45.1
Salt	Saguaro	70.0	60.8	59.8	60.6	45.9

<u>COLORADO RIVER DRAINAGE</u>						
Colorado	Lake Havasu	619.4	546.3	540.7	542.7	541.4
Colorado	Lake Mohave	1,810.0	1,639.0	1,768.0	1,680.0	1,522.3*
Colorado	Lake Mead	27,207.0	15,629.0	15,508.0	11,279.0	17,424.7
Colorado	Lake Powell	25,002.0	7,660.4	8,804.1	6,197.0	---
Little Colo.	Lyman	30.6	17.2	19.9	9.8	6.9
Little Colo.	Show Low Lake	5.1	0.7	5.1	3.1	0.8*

\*Average is for less than 15 years of Record in the 1948-62 period.



THE HISTORY OF THE UNITED STATES OF AMERICA

BY JAMES M. SMITH

NEW YORK: PUBLISHED BY J. B. LIPPINCOTT & CO., 15 N. 4TH ST.

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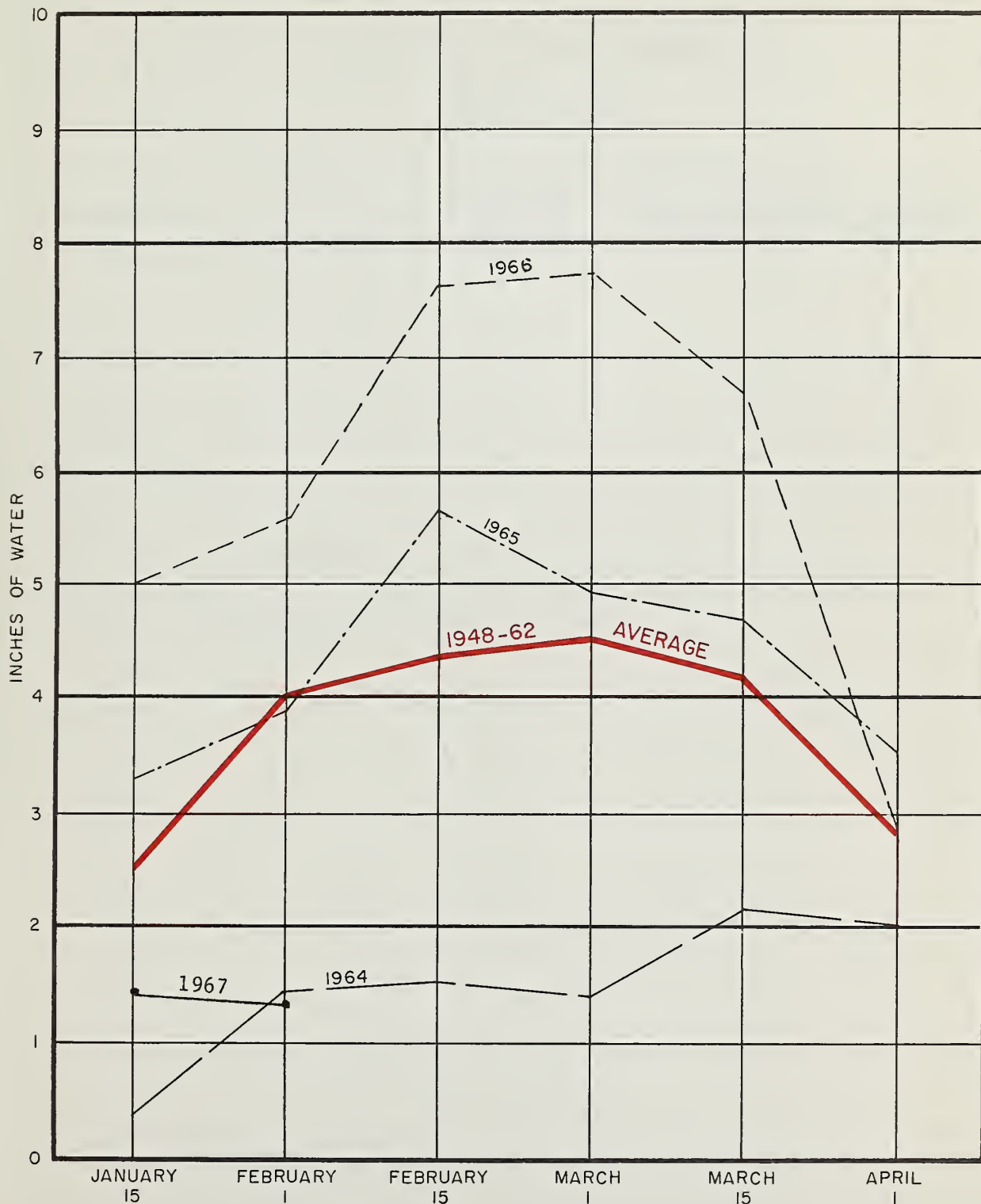
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# RELATIVE SNOW WATER ACCUMULATION ARIZONA

1967



*This graph represents the average snow water content on eleven selected snow courses on Arizona Sub-Watersheds.*



SNOW COVER ON ARIZONA WATERSHEDS

FEBRUARY 1, 1967

Watershed	No. of Courses Average	Water Content of Snow (Inches)	This Year's Water Content of Snow Expressed as Percent of:	
			Last Year	Average *
Gila	7	0.07	1%	3%
Salt	10	1.1	16%	25%
Verde	7	1.3	29%	35%
Little Colorado	4	1.3	19%	27%

\* Actual or Estimated 1948-62, 15-year Average

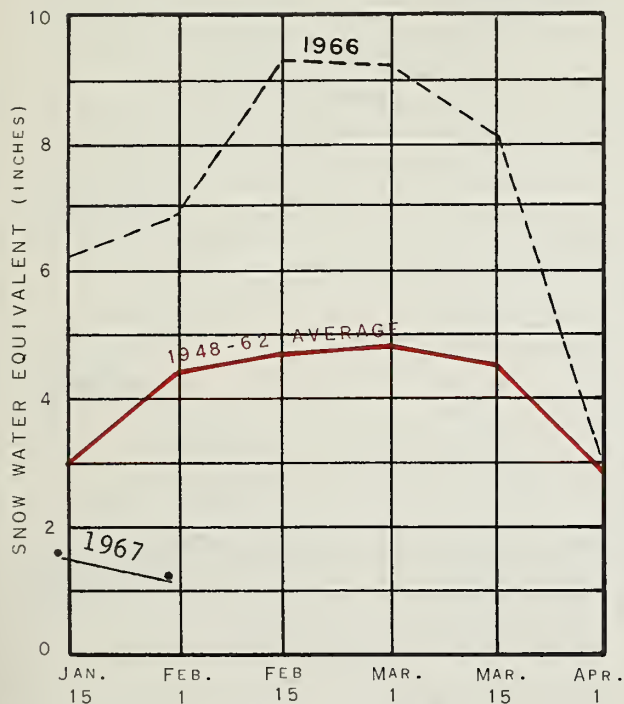




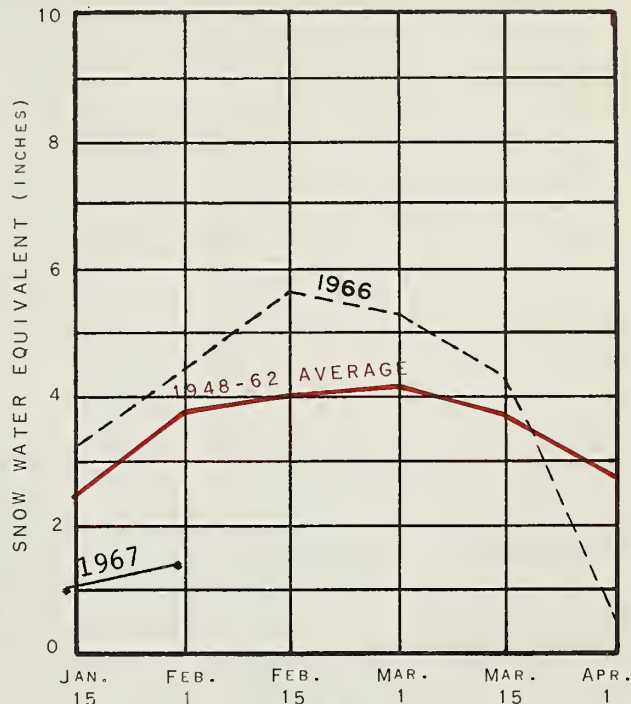
# 1967

## ARIZONA SNOW COVER

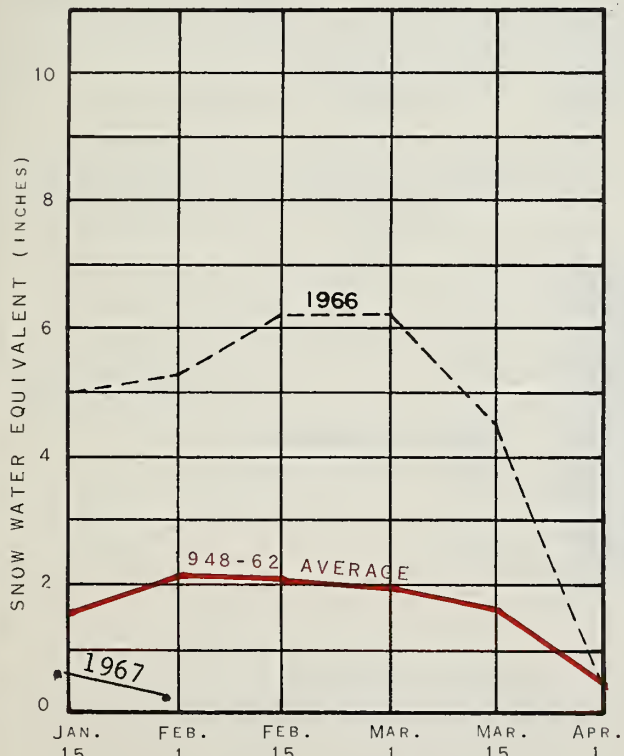
### BY WATERSHEDS



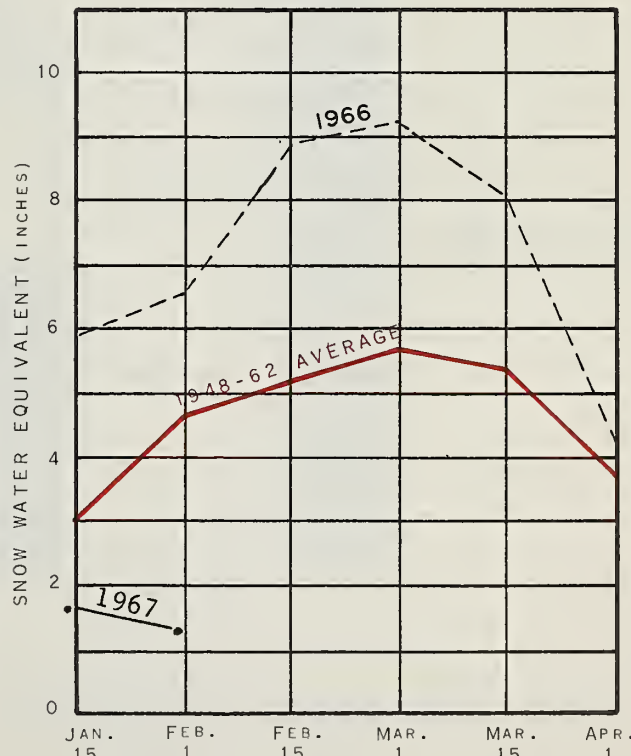
**SALT RIVER**



**VERDE RIVER**



**GILA RIVER**

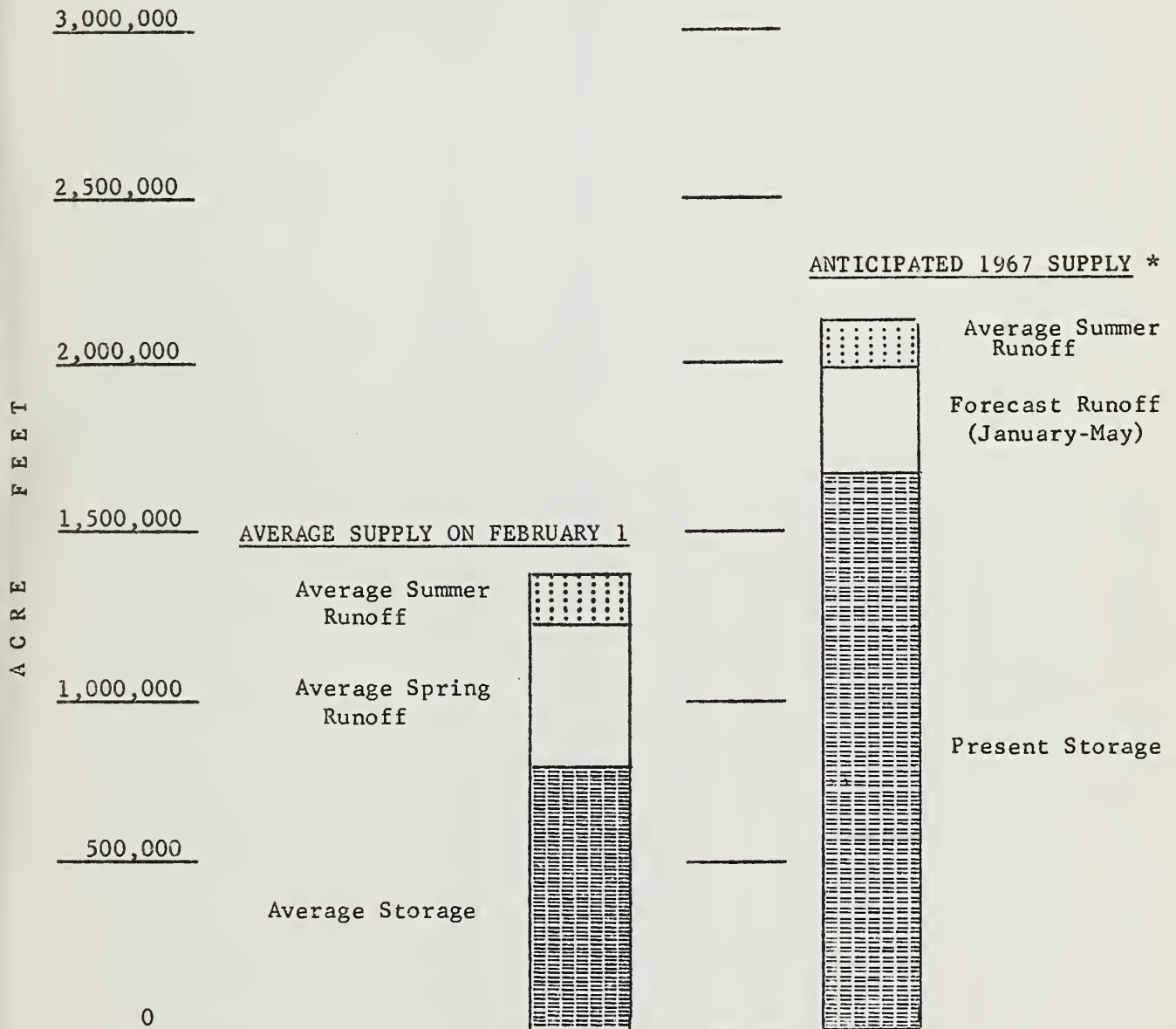


**LITTLE COLORADO RIVER**

BASED ON SELECTED SNOW SURVEY COURSES



WATER SUPPLY INVENTORY  
SALT RIVER VALLEY SYSTEM  
FEBRUARY 1, 1967



\* Based on present Storage + Forecast Spring runoff + Average Summer runoff



# SNOW ABOUT FEBRUARY 1, 1967

DRAINAGE BASIN and SNOW COURSE			CURRENT INFORMATION			PAST RECORD	
NAME	NO.	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)	
						LAST YEAR	AVERAGE <sup>a</sup>

## GILA RIVER

Bear Wallow	10T1	8100	2/1	0	0.0	14.4	3.8
Beaver Head	9S6	8000	1/29	1	0.2	6.9	3.2
Coronado Trail	9S7	8000	1/31	0	0.0	7.0	2.6
Crazy Horse (A)	9T2-A	10200	--	-	---	19.0	---
Emory Pass *	7T1	7800	1/27	0	0.0	---	---
Frisco Divide	8S1-M	8000	1/31	1	0.3	5.5	2.3
Hannagan Meadows *	9S11	9090	1/29	10	2.2	14.6	---
High Peak (A)	9T1-A	10600	--	-	---	20.0	---
Hummingbird (A)	8S9-A	10550	1/31	0	0.0	16.1	---
Ice King	8S6	8020	1/31	9	1.9	8.2	---
Inman	7S2	7800	1/27	0	0.0	2.0	0.5
McKnight Cabin *	7S3	9300	1/27	1	0.2	---	---
Mogollon	8S2	7000	1/31	T	T	3.7	1.6 **
Nutrioso	9S4	8500	1/31	0	0.0	5.3	2.1
Redstone Trail	8S7	8600	1/31	9	2.0	10.2	---
Rose Canyon	10T2	7300	2/1	0	0.0	9.2	2.3
Silver Creek Divide	8S8	9000	1/31	14	3.5	15.5	---
State Line	9S8	8000	1/31	0	0.0	6.5	2.5
Whitewater (A)	8S10-A	10750	1/31	14	3.8	20.2	---

## SALT RIVER

Baldy	9S1	9125	1/31	9	2.3	9.3	6.8 **
Beaver Head	9S6	8000	1/29	1	0.2	6.9	3.2
Canyon Creek	10R7-M	7500	1/30	8	2.1	5.9	3.1 **
Canyon Point	10R8	7600	1/30	10	2.7	---	---
Coronado Trail	9S7	8000	1/31	0	0.0	7.0	2.6
Forest Dale	10R6	6430	1/31	0	0.0	0.7	1.5
Ft. Apache	9R5	9160	1/31	12	2.7	8.3	7.2 **
Hannagan Meadows	9S11	9090	1/29	10	2.2	14.6	---
Hawley Lake	9R10	8300	1/31	5	1.4	5.9	---
Heber	10R4	7600	1/30	7	1.8	5.8	3.2 **
Maverick Fork	9S2	9050	1/31	11	2.4	13.0	7.9 **
McNary	9R2-M	7200	1/31	0	0.0	3.2	2.4
Milk Ranch	9R1	7000	1/31	0	0.0	1.3	2.1
Mt. Ord (A)	9S12-A	11000	--	-	---	29.0	---
Nutrioso *	9S4	8500	1/31	0	0.0	5.3	2.1
Pacheta	9S5	7800	1/30	0	0.0	7.6	3.8 **
Smith Cienega (A)	9S14-A	9850	--	-	---	24.5	---
Wilson Lake	9R6	9100	1/31	17	4.2	8.1	---
Workman Creek	10S1	6900	1/31	6	1.7	7.3	4.4 **

## BILL WILLIAMS RIVER

Camp Wood *	12R1	5700	1/29	0	0.0	1.5	1.3
Copper Basin Divide	12R6	6720	1/31	1	0.3	3.1	---
Iron Springs	12R2	6200	1/31	1	0.1	0.7	1.7
Willow Ranch	13P1	5000	1/31	0	0.0	0.2	0.8

(a) 1948-62, 15 year period. (\*) Adjacent drainage. (\*\*) 1948-62 Adjusted Average. (A) Aerial observation: Water content estimated.



1. The first part of the paper discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is essential for the proper management of the company's finances and for ensuring that all parties involved are kept up-to-date on the current status of the account.

2. The second part of the paper describes the various methods that can be used to collect and analyze data. It includes a detailed discussion of the different types of data that can be collected, such as sales figures, customer feedback, and market research. It also discusses the various techniques that can be used to analyze this data, such as statistical analysis and trend analysis.

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# SNOW ABOUT FEBRUARY 1, 1967

DRAINAGE BASIN and SNOW COURSE			CURRENT INFORMATION			PAST RECORD	
NAME	NO.	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)	
						LAST YEAR	AVERAGE <sup>a</sup>

## VERDE RIVER

Baker Butte	11R6	7300	1/30	6	2.0	10.1	---
Camp Wood	12R1	5700	1/29	0	0.0	1.5	1.3
Chalender	12P1-M	7100	1/30	8	2.3	4.1	3.2
Copper Basin Divide	12R6	6720	1/31	1	0.3	3.1	---
Fort Valley	11P2	7350	1/31	2	0.7	3.1	2.6
Gaddes Canyon	12R4	7600	1/30	5	1.1	6.2	4.7 **
Happy Jack	11R5	7630	1/31	4	1.0	5.7	3.7 **
Iron Springs *	12R2	6200	1/31	1	0.1	0.7	1.7
Mingus Mountain	12R3	7100	1/30	0	0.0	1.0	1.7
Mormon Lake *	11R4	7350	1/31	9	2.3	5.6	4.6
Mormon Mountain	11R3-M	7500	1/31	6	1.7	6.2	6.1 **
Munds Park	11R1-M	6500	1/31	2	0.5	1.1	3.1 **
Newman Park	11P5-M	6750	1/31	3	0.9	2.4	---
Snow Bowl #1	11P4	10260	1/31	26	8.0	10.0	---
Snow Bowl #2	11P6	11200	1/31	46	13.0	19.8	---
White Spar	12R5	6000	1/31	T	0.1	0.2	---
White Horse Lake Jct.	12P2	7180	1/27	10	2.3	---	---

## LOWER COLORADO RIVER

Bill Williams Summit	12P4	8950	1/27	25	7.5	---	---
Bill " Intermediate	12P5	8550	1/27	21	5.4	---	---
Bright Angel	12N1	8400	1/26	19	4.2	3.5	7.1 **
Chalender *	12P1-M	7100	1/30	8	2.3	4.1	3.2
Fort Valley	11P2	7350	1/31	2	0.7	3.1	2.6
Grand Canyon	11P1	7500	1/31	2	1.1	1.6	2.5
Williams Ski Run	12P3	7720	1/27	14	4.3	---	---

## LITTLE COLORADO RIVER

Baldy	9S1	9125	1/31	9	2.3	9.3	6.8 **
Canyon Creek	10R7-M	7500	1/30	8	2.1	5.9	3.1 **
Canyon Point	10R8	7600	1/30	10	2.7	---	---
Forest Dale	10R6	6430	1/31	0	0.0	0.7	1.5
Ft. Apache	9R5	9160	1/31	12	2.7	8.3	7.2 **
Fort Valley	11P2	7350	1/31	2	0.7	3.1	2.6
Happy Jack *	11R5	7630	1/31	4	1.0	5.7	3.7 **
Heber	10R4	7600	1/30	7	1.8	5.8	3.2 **
McNary	9R2-M	7200	1/31	0	0.0	3.2	2.4
Mormon Lake	11R4	7350	1/31	9	2.3	5.6	4.6
Mormon Mountain	11R3-M	7500	1/31	6	1.7	6.2	6.1 **
Nutriso	9S4	8500	1/31	0	0.0	5.3	2.1
Snow Bowl #1	11P4	10260	1/31	26	8.0	10.0	---
Snow Bowl #2	11P6	11200	1/31	46	13.0	19.8	---
Wilson Lake *	9R6	9100	1/31	17	4.2	8.1	---

(a) 1948-62, 15 year period. (\*) Adjacent drainage. (\*\*) 1948-62 Adjusted Average. (V) Aerial observation; Water content estimated.



# PRECIPITATION

## STORAGE GAGE DATA - ABOUT FEBRUARY 1, 1967

Drainage Basin and Storage Gage	Elev.	Current Data		1948-62	From Approx. 11/1 to Date		
		Date of Reading	January Precip.	Av. Jan. Precip.	This Year	1948-62 Average	% of Average
<u>GILA RIVER</u>							
Silver Creek Divide	9000	1/31	.85	---	5.20#	---	---
Hannagan Meadows	9030	1/29	1.99	3.30*	6.54	8.51*	77
<u>SALT RIVER</u>							
Canyon Point	7600	1/30	1.06	---	11.83#	---	---
Hannagan Meadows	9030	1/29	1.99	3.30*	6.54	8.51*	77
Little Wildcat	7600	1/30	1.05	4.06*	8.12	8.22*	99
(Heber Snow Course)							
Maverick Fork	9050	1/31	.75	2.83*	5.32	6.87*	77
Workman Creek **	6970	1/31	1.14	4.62	11.00	10.70	103
Wilson Lake	9100	1/31	.50	---	4.71	---	---
<u>VERDE RIVER</u>							
Baker Butte	7300	1/30	1.32	---	10.54	---	---
Copper Basin Divide	6720	1/31	1.02	---	7.96#	---	---
Fort Valley **	7350	1/31	1.22	2.45	8.88	5.30	168
Happy Jack **	7480	1/31	.49	3.41*	7.31	7.10*	103
Mingus Mountain	7660	1/30	.90	2.99	4.20	5.89	71
Mormon Mountain	7500	1/31	1.77	---	19.38	---	---
<u>LITTLE COLORADO</u>							
Sheep Crossing	9125	1/31	.70	2.61*	5.03	6.23*	81
(Baldy Snow Course)							
Little Wildcat	7600	1/30	1.05	4.06*	8.12	8.22*	99
(Heber Snow Course)							

\* 1948-62 Adjusted Average

\*\* Data supplied by U. S. Forest Service

# Partially Estimated

# APPENDIX

## TABLE 1. SUMMARY OF DATA FOR THE STUDY

No.	Location		Date		Time		Remarks
	Station	Point	Month	Year	Hour	Min	
1	Station 1	Point 1	May	1961	10	15	Clear sky, light breeze
2	Station 2	Point 2	May	1961	10	20	Clear sky, light breeze
3	Station 3	Point 3	May	1961	10	25	Clear sky, light breeze
4	Station 4	Point 4	May	1961	10	30	Clear sky, light breeze
5	Station 5	Point 5	May	1961	10	35	Clear sky, light breeze
6	Station 6	Point 6	May	1961	10	40	Clear sky, light breeze
7	Station 7	Point 7	May	1961	10	45	Clear sky, light breeze
8	Station 8	Point 8	May	1961	10	50	Clear sky, light breeze
9	Station 9	Point 9	May	1961	10	55	Clear sky, light breeze
10	Station 10	Point 10	May	1961	11	00	Clear sky, light breeze
11	Station 11	Point 11	May	1961	11	05	Clear sky, light breeze
12	Station 12	Point 12	May	1961	11	10	Clear sky, light breeze
13	Station 13	Point 13	May	1961	11	15	Clear sky, light breeze
14	Station 14	Point 14	May	1961	11	20	Clear sky, light breeze
15	Station 15	Point 15	May	1961	11	25	Clear sky, light breeze
16	Station 16	Point 16	May	1961	11	30	Clear sky, light breeze
17	Station 17	Point 17	May	1961	11	35	Clear sky, light breeze
18	Station 18	Point 18	May	1961	11	40	Clear sky, light breeze
19	Station 19	Point 19	May	1961	11	45	Clear sky, light breeze
20	Station 20	Point 20	May	1961	11	50	Clear sky, light breeze
21	Station 21	Point 21	May	1961	11	55	Clear sky, light breeze
22	Station 22	Point 22	May	1961	12	00	Clear sky, light breeze
23	Station 23	Point 23	May	1961	12	05	Clear sky, light breeze
24	Station 24	Point 24	May	1961	12	10	Clear sky, light breeze
25	Station 25	Point 25	May	1961	12	15	Clear sky, light breeze
26	Station 26	Point 26	May	1961	12	20	Clear sky, light breeze
27	Station 27	Point 27	May	1961	12	25	Clear sky, light breeze
28	Station 28	Point 28	May	1961	12	30	Clear sky, light breeze
29	Station 29	Point 29	May	1961	12	35	Clear sky, light breeze
30	Station 30	Point 30	May	1961	12	40	Clear sky, light breeze
31	Station 31	Point 31	May	1961	12	45	Clear sky, light breeze
32	Station 32	Point 32	May	1961	12	50	Clear sky, light breeze
33	Station 33	Point 33	May	1961	12	55	Clear sky, light breeze
34	Station 34	Point 34	May	1961	1	00	Clear sky, light breeze
35	Station 35	Point 35	May	1961	1	05	Clear sky, light breeze
36	Station 36	Point 36	May	1961	1	10	Clear sky, light breeze
37	Station 37	Point 37	May	1961	1	15	Clear sky, light breeze
38	Station 38	Point 38	May	1961	1	20	Clear sky, light breeze
39	Station 39	Point 39	May	1961	1	25	Clear sky, light breeze
40	Station 40	Point 40	May	1961	1	30	Clear sky, light breeze
41	Station 41	Point 41	May	1961	1	35	Clear sky, light breeze
42	Station 42	Point 42	May	1961	1	40	Clear sky, light breeze
43	Station 43	Point 43	May	1961	1	45	Clear sky, light breeze
44	Station 44	Point 44	May	1961	1	50	Clear sky, light breeze
45	Station 45	Point 45	May	1961	1	55	Clear sky, light breeze
46	Station 46	Point 46	May	1961	2	00	Clear sky, light breeze
47	Station 47	Point 47	May	1961	2	05	Clear sky, light breeze
48	Station 48	Point 48	May	1961	2	10	Clear sky, light breeze
49	Station 49	Point 49	May	1961	2	15	Clear sky, light breeze
50	Station 50	Point 50	May	1961	2	20	Clear sky, light breeze
51	Station 51	Point 51	May	1961	2	25	Clear sky, light breeze
52	Station 52	Point 52	May	1961	2	30	Clear sky, light breeze
53	Station 53	Point 53	May	1961	2	35	Clear sky, light breeze
54	Station 54	Point 54	May	1961	2	40	Clear sky, light breeze
55	Station 55	Point 55	May	1961	2	45	Clear sky, light breeze
56	Station 56	Point 56	May	1961	2	50	Clear sky, light breeze
57	Station 57	Point 57	May	1961	2	55	Clear sky, light breeze
58	Station 58	Point 58	May	1961	3	00	Clear sky, light breeze
59	Station 59	Point 59	May	1961	3	05	Clear sky, light breeze
60	Station 60	Point 60	May	1961	3	10	Clear sky, light breeze
61	Station 61	Point 61	May	1961	3	15	Clear sky, light breeze
62	Station 62	Point 62	May	1961	3	20	Clear sky, light breeze
63	Station 63	Point 63	May	1961	3	25	Clear sky, light breeze
64	Station 64	Point 64	May	1961	3	30	Clear sky, light breeze
65	Station 65	Point 65	May	1961	3	35	Clear sky, light breeze
66	Station 66	Point 66	May	1961	3	40	Clear sky, light breeze
67	Station 67	Point 67	May	1961	3	45	Clear sky, light breeze
68	Station 68	Point 68	May	1961	3	50	Clear sky, light breeze
69	Station 69	Point 69	May	1961	3	55	Clear sky, light breeze
70	Station 70	Point 70	May	1961	4	00	Clear sky, light breeze
71	Station 71	Point 71	May	1961	4	05	Clear sky, light breeze
72	Station 72	Point 72	May	1961	4	10	Clear sky, light breeze
73	Station 73	Point 73	May	1961	4	15	Clear sky, light breeze
74	Station 74	Point 74	May	1961	4	20	Clear sky, light breeze
75	Station 75	Point 75	May	1961	4	25	Clear sky, light breeze
76	Station 76	Point 76	May	1961	4	30	Clear sky, light breeze
77	Station 77	Point 77	May	1961	4	35	Clear sky, light breeze
78	Station 78	Point 78	May	1961	4	40	Clear sky, light breeze
79	Station 79	Point 79	May	1961	4	45	Clear sky, light breeze
80	Station 80	Point 80	May	1961	4	50	Clear sky, light breeze
81	Station 81	Point 81	May	1961	4	55	Clear sky, light breeze
82	Station 82	Point 82	May	1961	5	00	Clear sky, light breeze
83	Station 83	Point 83	May	1961	5	05	Clear sky, light breeze
84	Station 84	Point 84	May	1961	5	10	Clear sky, light breeze
85	Station 85	Point 85	May	1961	5	15	Clear sky, light breeze
86	Station 86	Point 86	May	1961	5	20	Clear sky, light breeze
87	Station 87	Point 87	May	1961	5	25	Clear sky, light breeze
88	Station 88	Point 88	May	1961	5	30	Clear sky, light breeze
89	Station 89	Point 89	May	1961	5	35	Clear sky, light breeze
90	Station 90	Point 90	May	1961	5	40	Clear sky, light breeze
91	Station 91	Point 91	May	1961	5	45	Clear sky, light breeze
92	Station 92	Point 92	May	1961	5	50	Clear sky, light breeze
93	Station 93	Point 93	May	1961	5	55	Clear sky, light breeze
94	Station 94	Point 94	May	1961	6	00	Clear sky, light breeze
95	Station 95	Point 95	May	1961	6	05	Clear sky, light breeze
96	Station 96	Point 96	May	1961	6	10	Clear sky, light breeze
97	Station 97	Point 97	May	1961	6	15	Clear sky, light breeze
98	Station 98	Point 98	May	1961	6	20	Clear sky, light breeze
99	Station 99	Point 99	May	1961	6	25	Clear sky, light breeze
100	Station 100	Point 100	May	1961	6	30	Clear sky, light breeze



ARIZONA SOIL MOISTURE - ABOUT FEBRUARY 1, 1967

Drainage Basin and Station	<u>1/</u> Station Number	Elev.	Soil Profile in Inches		Date	Soil Moisture Content in Inches			
			Depth	Cap.		1967	Past Records		
							1966	1965	Avg.
<u>GILA RIVER</u>									
Frisco Divide	8S1-M	8000	48	13.3	1/31	8.5	9.9	9.8	10.4
<u>SALT RIVER</u>									
Black River Divide	9S10-*	9100	48	16.8	1/31	16.8	18.1	17.8	14.8
Canyon Creek	10R7-M	7500	48	18.3	1/30	18.7#	18.2	14.9	14.1
Corduroy Creek	10R8-*	6000	36	13.5	1/31	8.0	12.5	10.1	7.6
McNary	9R2-M	7200	48	16.3	1/31	14.7	17.9	15.5	14.2
<u>VERDE RIVER</u>									
Mormon Mountain	11R3-M	7500	48	16.1	1/31	17.4	17.7	17.8	14.1
Newman Park	11P5-M	6750	36	17.7	1/31	18.4	19.5	19.5	13.6

1/ M - Snow Course and Soil Moisture Station  
 \* - Soil Moisture Station Only  
 # - Partially estimated.



## SNOW COURSE

Baker Butte -----  
 Baldy -----  
 Bear Wallow -----  
 Beaver Head -----  
 Bill Williams Intermediate ----  
 Bill Williams Summit -----  
 Bright Angel -----  
 Camp Wood -----  
 Canyon Creek -----  
 Canyon Point -----  
 Chalender -----  
 Copper Basin Divide -----  
 Coronado Trail -----  
 Crazy Horse -----  
 Emory Pass -----  
 Forest Dale -----  
 Ft. Apache -----  
 Fort Valley -----  
 Frisco Divide -----  
 Gaddes Canyon -----  
 Grand Canyon -----  
 Hannagan Meadows -----  
 Happy Jack -----  
 Hawley Lake -----  
 Heber -----  
 High Peak -----  
 Hummingbird -----  
 Ice King -----  
 Inman -----  
 Iron Springs -----  
 Maverick Fork -----  
 McKnight Cabin -----  
 McNary -----  
 Milk Ranch -----  
 Mingus Mountain -----  
 Mogollon -----  
 Mormon Lake -----  
 Mormon Mountain -----  
 Mt. Ord -----  
 Munds Park -----  
 Newman Park -----  
 Nutrioso -----  
 Pacheta -----  
 Redstone Trail -----  
 Rose Canyon -----  
 Silver Creek Divide -----  
 Smith Cienega -----  
 Snow Bowl #1 -----  
 Snow Bowl #2 -----  
 State Line -----  
 White Horse Lake Junction -----  
 White Spar -----  
 Whitewater -----  
 Williams Ski Run -----  
 Willow Ranch -----  
 Wilson Lake -----  
 Workman Creek -----

## SNOW SURVEYOR

SCS and SRVWUA  
 SCS and SRVWUA  
 Forest Service - Douglas Smith  
 N. A. Josh  
 Forest Service - Chuck Scheier  
 Forest Service - Chuck Scheier  
 National Park Service - Bob Peterson  
 Lyn Pehl  
 SCS and SRVWUA  
 SCS and SRVWUA  
 Forest Service - M. E. Richards  
 SCS - Bill Gray  
 Forest Service - Curtis Connolly  
 Forest Service - Art Maynard  
 SCS - Bob Abercrombie  
 Bureau of Indian Affairs - Raymond Endfield  
 SCS and SRVWUA  
 Rocky Mountain Forest & Range Exp. Station  
 Forest Service - Joe Clayton  
 Paul G. Lidbeck  
 National Park Service - Larry Hakel  
 N. A. Josh  
 Forest Service - John Hafterson  
 Bureau of Indian Affairs - Raymond Endfield  
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 Forest Service - Art Maynard  
 Ray Freeman  
 James R. Wray  
 C. H. McCauley  
 SCS - Bill Gray  
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 Ray Freeman  
 Bureau of Indian Affairs - Raymond Endfield  
 Bureau of Indian Affairs - Raymond Endfield  
 Paul G. Lidbeck  
 James R. Wray  
 SCS and SRVWUA  
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 Air Transit - Show Low  
 SCS and SRVWUA  
 SCS and SRVWUA  
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 Everett Wells Jr.  
 James R. Wray  
 Forest Service - Douglas Smith  
 James R. Wray  
 Air Transit - Show Low  
 Forest Service - Angus Porter  
 Forest Service - Angus Porter  
 Forest Service - Joe Clayton  
 Forest Service - Chuck Scheier  
 SCS - Bill Gray  
 Ray Freeman  
 Forest Service - Chuck Scheier  
 Tiny Miller  
 SCS and SRVWUA  
 Rocky Mountain Forest & Range Exp. Station



# The Following Organizations Cooperate in the Arizona Snow Survey Work

## FEDERAL

Department of Agriculture

Soil Conservation Service

Forest Service

Apache Forest

Coconino Forest

Coronado Forest

Gila Forest

Kaibab Forest

Prescott Forest

Rocky Mountain Forest and Range Experiment Station

Tonto Forest

Department of Commerce

Weather Bureau

Arizona Section

Department of Interior

Bureau of Reclamation

Region III

Geological Survey

Arizona District

Bureau of Indian Affairs

Fort Apache Reservation

San Carlos Irrigation Project

National Park Service

Grand Canyon National Park

Gila Water Commissioner

Safford, Arizona

## STATE

Arizona Agricultural Experiment Station

## IRRIGATION PROJECTS

Salt River Valley Water Users' Association

Phoenix, Arizona

San Carlos Irrigation and Drainage District

Coolidge, Arizona

## PRIVATE

Southwest Forest Industries, Inc.

McNary, Arizona

Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

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